

# (inductive) CaloFlow

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We apply CaloFlow to GEANT4 showers of Dataset 1, producing high-fidelity samples with a sampling time of less than 0.1ms per shower. We validated the fidelity of the samples using multiple metrics, including a classifier metric. To generalize CaloFlow to the higher dimensional Datasets 2 and 3, we propose a new approach called Inductive CaloFlow. This approach involves training the flow on the pattern of energy deposition in both the current and previous layer of a GEANT4 event. Inductive CaloFlow can efficiently generate new events for large calorimeter geometries and reproduces GEANT4-like events with high fidelity. With both approaches, a teacher-student pairing was used to increase sampling speed without significant loss of sample quality.

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